

SUPPORT FOR THE AMENDMENT

This Amendment amends Claims 1-2 and 12; and adds new Claim 33. Support for the amendments is found in the specification and claims as originally filed. In particular, support for Claims 1-2 is found in Claims 1-2 and in the specification at least at page 6, lines 23-24. Support for new Claim 33 is found at least in Claim 2. No new matter would be introduced by entry of these amendments.

Upon entry of these amendments, Claims 1-2, 4-17, 20-24 and 33 will be pending in this application. Claim 1 is independent.

REQUEST FOR RECONSIDERATION

Applicants respectfully request entry of the foregoing and reexamination and reconsideration of the application, as amended, in light of the remarks that follow.

The present invention provides a process for mask-free localized grafting of organic molecules on a composite surface.

Claims 1-2, 4, 7-9, 12, 14-17 and 19-24 are rejected under 35 U.S.C. § 102(b) over *Journal of Electroanalytical Chemistry*, 465: 200-208 (1999) ("Charlier"). Charlier discloses that the electropolymerization of methacrylonitrile and N-vinyl-2-pyrrolidone in anhydrous acetonitrile was followed *in situ* using an electrochemical quartz crystal microbalance (EQCM) by monitoring the buildup of electrografted polymer on the quartz crystal. Charlier at abstract. Charlier discloses that the EQCM measurements used AT-cut crystals coated with Pt deposited over a Ti adhesion layer. Charlier discloses that the quartz crystals were metallized on both faces. Charlier at Experimental on pages 201-202.

Thus, Charlier discloses electrografting polymer onto a ***multilayered composite material***, which has an exposed outermost layer that is Pt.

However, Charlier fails to disclose or suggest electrografting organic molecules onto a **composite surface** comprising **areas that are materials of different nature**. Charlier fails to suggest the independent Claim 1 limitations of a "process for mask-free localized grafting of organic molecules ... onto a composite surface comprising conductive and/or semiconductive **areas that are materials of different nature**, the process comprising placing said organic molecules in contact with said composite surface; and electrochemically grafting an insulating film of said organic molecules on chosen, defined areas of said conductive and/or semiconductive areas by bringing said chosen, defined areas to a potential ...".

Thus, the rejection over Charlier should be withdrawn.

Claims 1-2, 7 and 14 are rejected under 35 U.S.C. § 102(b) over U.S. Patent No. 5,350,323 ("Boissel"). Boissel discloses a contact for an electrical contractor protected by a polymer film. Boissel at abstract. Boissel discloses that between the base metal of the contact and the polymer film is intercalated a metal underlayer. Boissel at column 1, lines 43-46. Boissel discloses at Example 1 a brass surface on which is deposited a nickel underlayer followed by an polyacrylonitrile film.

Thus, Boissel discloses depositing a polymer film onto a **composite material**, which has an exposed outermost layer (the "underlayer") that is a metal.

The polymer film disclosed in Boissel is deposited on the surface by electropolymerization and under cathodic polymerization, as indicated at step (a) of the process. Boissel at column 2, lines 5-7.

Thus, Boissel's polymer film is **deposited** and not electrografted.

As a result, Boissel fails to disclose or suggest **electrografting** organic molecules onto a **composite surface** comprising **areas that are materials of different nature**. Boissel fails to suggest the independent Claim 1 limitations of a "process for mask-free localized **grafting** of organic molecules ... onto a composite surface comprising conductive and/or

semiconductive **areas that are materials of different nature**, the process comprising placing said organic molecules in contact with said composite surface; and **electrochemically grafting** an insulating film of said organic molecules on chosen, defined areas of said conductive and/or semiconductive areas by bringing said chosen, defined areas to a potential ...".

Thus, the rejection over Boissel should be withdrawn.

Claims 1-2, 4-17 and 20-24 are rejected under 35 U.S.C. § 103(a) over U.S. Patent No. 4,269,682 ("Yano") in view of Boissel.

The present invention provides a process for a localized functionalization with organic molecules of defined areas of a surface, while overcoming and solving the problems posed by conventional process as regarding the resolution of the masking phases and the strength of attachment of the coating.

Yano discloses a system for measuring chemical properties of a substance in an electrolyte. The system disclosed in Yano comprises a measuring unit with a reference electrode comprising an insulated gate field effect transistor (FET) whose gate region is overlayed with a polymeric membrane and a pseudo reference electrode. Yano at column 3, lines 34-39.

The electrode presented in Yano's Fig. 3 is a two-layered structure of silicon dioxide (23) and of silicon nitride (24), while the reference (22) corresponds to the pseudo reference electrode. Yano at column 9, lines 15-23. Thus, the surface onto which Yano's ion-sensitive membrane (26) and hydrophobic organic membrane (25) are coated is not a composite surface, but instead is the surface of a **multilayered composite material**.

Thus, like Charlier and Boissel, discussed above, Yano fails to suggest the independent Claim 1 limitation of electrografting organic molecules onto a **composite surface** comprising **areas that are materials of different nature**.

Yano discloses that the polymeric membrane is formed by polymerizing monomers.

Yano at column 4, lines 58-59.

The Final Rejection at page 7, lines 1-2, admits that Yano does not explicitly suggest that the polymerization be carried out by electrografting.

The Final Rejection at page 7, line 5, relies upon Boissel for disclosing "electropolymerization".

However, as discussed above, the polymer film disclosed in Boissel is deposited on the surface by electropolymerization and under cathodic polymerization, as indicated at step (a) of the process. Boissel at column 2, lines 5-7. Thus, Boissel's polymer film is **deposited** and not electrografted.

Thus, the cited prior art fails to suggest electrografting organic molecules onto a composite surface. The cited prior art fails to suggest the independent Claim 1 limitation of "**electrochemically grafting** an insulating film of said organic molecules on chosen, defined areas of said conductive and/or semiconductive **areas that are materials of different nature**".

Furthermore, Boissel discloses that a mask consisting of an aluminum layer is used for the polymer coating on defined areas. Boissel at column 9, lines 48-64. Boissel discloses neither the electrografting nor the mask-free process for a localized functionalization of the present invention.

Because the cited prior art fails to suggest all the limitations of independent Claim 1, the rejection under 35 U.S.C. § 103(a) should be withdrawn.

Claims 12-17 are rejected under 35 U.S.C. § 112, second paragraph. To obviate the rejection, Claim 12 is amended to recite "said organic molecules include electrocleavable molecules". Applicants submit that one group of molecules can include a sub-group of molecules.

In view of the foregoing amendments and remarks, Applicants respectfully submit that the application is in condition for allowance. Applicants respectfully request favorable consideration and prompt allowance of the application.

Should the Examiner believe that anything further is necessary in order to place the application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

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Respectfully submitted,

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A handwritten signature in cursive script, reading "Corwin P. Umbach", written over a horizontal line.

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